April 7, 2017

BY ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: ***Spectrum Bands Above 24 GHz et. al.*****, GN Docket No. 14-177, IB Docket No. 15-256, WT Docket No. 10-112, and IB Docket No. 97-95**

Dear Ms. Dortch:

On April 6, 2017, EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC, (collectively "EchoStar"), Inmarsat, Inc. ("Inmarsat"), WorldVu Satellites Ltd., d/b/a OneWeb ("OneWeb"), SES Americom, Inc. ("SES"), O3b Limited ("O3b"), Intelsat Corporation ("Intelsat"), and The Boeing Company ("Boeing") (jointly, the "Satellite Broadband Operators") met with Daudeline Meme, Legal Advisor to Commissioner Mignon Clyburn, to discuss the Satellite Broadband Operators' Joint Reply to oppositions to petitions for reconsideration in the above-referenced proceeding.

EchoStar was represented by Jennifer A. Manner, Senior Vice President, Regulatory Affairs. Inmarsat was represented by Giselle Creeser, Director, Regulatory. OneWeb was represented by outside counsel Douglas Svor of Sheppard, Mullin, Richter & Hampton LLP. SES was represented by Petra Vorwig, Senior Legal and Regulatory Counsel. O3b was represented by William Lewis, Regulatory Counsel. Intelsat was represented by Susan Crandall, Associate General Counsel. Boeing was represented by outside counsel Bruce Olcott of Jones Day.

In the meeting the parties discussed the attached talking points, setting out the Satellite Broadband Operators' recommendations for a fair and reasonable alternative framework for earth station siting in the 28 GHz and 37/39 GHz bands, which were distributed to the attendees.

Pursuant to the Commission's rules, this notice is being filed in the above-referenced dockets for inclusion in the public record. Please contact me should you have any questions.

Respectfully submitted,

/s/ Jennifer A. Manner

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Jennifer A. Manner
Senior Vice President, Regulatory Affairs
EchoStar Corporation
11717 Exploration Lane
Germantown, MD 20876
(301) 428-5893

Cc: Daudeline Meme

Attachment

The Satellite Broadband Companies Propose Earth Station Siting and License Database Rules to Permit Equitable Use of the 28 and 39 GHz Bands by Fixed Satellite Service Operators and UMFUS Licensees

- EchoStar Satellite Operating Corporation, Hughes Network Systems LLC, Inmarsat, Inc., The Boeing Company, Intelsat Corp., O3b Ltd., SES Americom, Inc., and WorldVu Satellites Ltd. d/b/a OneWeb ("the Satellite Broadband Companies") propose a set of siting rules for fixed satellite service (FSS) earth stations in the 27.5-28.35 GHz (28 GHz) and 37.5-40 GHz (39 GHz) bands that will ensure that areas of greatest value to UMFUS licensees will be available to them and provide FSS operators needed flexibility and certainty in establishing earth station sites that will support their current and future system requirements.

- The siting rules adopted in the Spectrum Frontiers R&O have potential to lead to results that are neither consistent with the objectives of UMFUS development or the future plans of the Satellite Broadband companies. For example, the hypothetical 28 GHz -77.6 dB/MHz·m^2 earth station contour illustrated below illustrates such a result. The contour presumes an 8.1 m diameter antenna one mile to the northeast of Mentone, Texas, along State Highway 302, pointed to a geostationary satellite at the same longitude with attenuation according to the FCC standard emission mask. The contour overlaps several census blocks with a combined population of one (1) person. The population of Loving County, Texas, was 82 at the 2010 census. Siting of an earth station at the center of the circle at the top of the next page is ***not*** permitted under the 0.1 percent population limit, and likely not under an expansive construction of the arterial road standard (Highway 302 is the only major road in Loving County, and likely the corridor along which fiber would be deployed).

- The conditions imposed on earth station siting seriously impair the ability of FSS operators to make productive use of valuable spectrum resources and undermine their ability to provide advanced broadband services to consumers across the country, particularly in unserved and underserved areas. This is illustrated by EchoStar's analysis (attached as exhibit A) indicating that only four of the seventeen 28 GHz gateways that it has actually deployed to provide broadband services through its EchoStar XIX satellite would meet the requirements of the Commission's current siting restrictions if not grandfathered. This includes a site on the outskirts of North Platte, Nebraska (illustrated below), which has a contour covering a population of zero people but overlaps a road that runs for miles through uninhabited farmland that is classified as an "urban minor arterial road" under Department of Transportation guidelines as applied by the Nebraska Department of Roads.

- Accordingly, the FCC should revise the conditions for deployment of FSS earth stations as follows:

1. ***Adopt a revised population coverage limit for FSS earth stations in the 28 and 39 GHz bands.*** By adopting an 0.2% population coverage limit in the most densely populated license areas, a fixed population limit in low and medium density license areas, and a 10% (for 28 GHz) or 5% (for 39 GHz) population coverage limit in the most sparsely populated license areas, the FCC would create a framework that encourages earth station operators to site their stations in areas that are likely to be of lower value to UMFUS operators but still provide realistic opportunities for earth stations to be deployed in low-density pockets within higher population license areas, all while protecting future UMFUS deployments.

28 GHz Tier

Tier 1 - High population license areas	Population greater than 300,000	FSS earth stations may cover no more than 0.2% of the license area's population.
Tier 2 – Low to medium population license areas	Population between 6,000 and 300,000	FSS earth stations may cover a total of 600 people without reference to the license area's population.
Tier 3 – Very low population license areas	Population less than 6,000	FSS earth stations may cover 10% of the license area's population.

37/39 GHz Tier

Tier 1 - High population PEA	Population greater than 1,500,000	FSS earth stations may cover no more than 0.2% of the license area's population.
Tier 2 – Low to medium population PEA	Population between 60,000 and 1,500,000	FSS earth stations may cover a total of 3000 people without reference to the license area's population.
Tier 3 – Very low population PEA	Population less than 60,000	FSS earth stations may cover 5% of the license area's population.

2. ***Better define the transient population limits.*** When coupled with other siting restrictions, the transient population restrictions, which prohibit FSS earth station

deployment at any location where the interference zone would "contain any major event venue, arterial street, interstate or U.S. highway, urban mass transit route, passenger railroad, or cruise ship port," severely restrict FSS deployment. If such limits are to be retained, each of these terms should be defined to avoid absurd results. Specifically:

a. "Major event venue" should be defined as one with a capacity of 10,000 or more.
b. "Arterial street, interstate or U.S. highway" should include only principal arterials.
c. "Passenger railroad" should be defined as railroad track operated by Amtrak.
d. "Cruise ship port" should apply to the fifteen largest ports in the United States.
e. "Urban mass transit route" should be eliminated as duplicative, as such routes typically follow principal arterial roads or share track with Amtrak.

3. ***Eliminate the rules limiting FSS operators to three earth stations in any given county (for 28 GHz) or Partial Economic Area (for 39 GHz).*** These rules are counterproductive to the extent they prevent FSS operators from locating multiple earth station facilities in areas with appropriate infrastructure but little or no impact on UMFUS. The numeric and transient population limits provide adequate protection to UMFUS licensees and render a limit on the number of FSS earth stations arbitrary and unnecessary.

4. ***Apply the 70/80/90 GHz Band Database Approach to UMFUS Facilities.*** Such a mechanism would provide a streamlined way for FSS operators to identify areas of minimal UMFUS deployment for use by earth stations, while obviating the need for UMFUS operators to respond to numerous requests for coordination, as the database manager would handle all initial queries.

- Adoption of this approach will create a regulatory regime that best enables the deployment of both satellite and terrestrial broadband systems capable of providing advanced communications services to Americans no matter where they live, helping to close the digital divide.

EXHIBIT A

ANALYSIS OF AUTHORIZED ECHOSTAR XIX GATEWAY EARTH STATIONS

City	State	Antenna Diameter (m)	Estimated population in contour	0.1% of County Population	Other Factors (arterial roads or event venues in contour, if present)
Billings	MT	5.6	400	151	Contour overlaps Central Avenue, a major E/W street, and baseball fields
San Diego	CA	5.6	1767	3183	
Albuquerque	NM	8.1	984	671	Contour overlaps Lomas Boulevard and a multiuser dwelling census block with 603 residents alone.
Boise	ID	5.6	107	409	
San Jose	CA	5.6	2056	1841	Contour overlaps railroad
Roseburg	OR	8.1	168	107	
Gilbert	AZ	9.2	400	3947	Contour overlaps a railroad and W. Guadalupe Road
Salt Lake City	UT	5.6	0	1063	Contour overlaps Interstate 215
Amarillo	TX	8.1	0	122	Contour overlaps Amarillo Civic Center
Tukwila	WA	8.1	551	2008	Contour overlaps off ramp from WA 99/599 to Tukwila Int'l Blvd
Bellevue	NE	13.2	82	165	

North Las Vegas	NV	5.6	0	2003	
Duluth	MN	8.1	0	200	Contour overlaps Rice Lake Rd, County Highway 4
Bismarck	ND	8.1	133	86	
Cheyenne	WY	9.2	0	94	Contour overlaps Campstool Rd
Missoula	MT	5.6	0	111	Contour overlaps West Broadway St (former US 10) and railroad
North Platte	NE	8.1	0	36	Contour overlaps East State Farm Road